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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/633,269

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David G. Leeper

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04/05/2006

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EXAMINER

NGUYEN, LEE

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/633,269		LEEPER ET AL.	
	Examiner		Art Unit	
	LEE NGUYEN		2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10, 11 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 5-9, 12-16 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

The IDS filed 10/26/2004 has been considered and recorded in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Cedervall et al. (US 6,011,974).

Regarding claim 18, Cedervall teaches a system comprising: one or more antenna(e) 301-302 (fig. 2); a wireless transceiver 303, 304, coupled with the antenna(e), to transmit/receive wireless signals in support of communication between the system and a remote system 208; and a ranging agent 203, coupled with the wireless transceiver, to exchange two or more wireless signals with one or more target device(s) (see col. 6, lines 27-38), each device recording a transmission strobe time (L-TOT-U) and a receive strobe time (L-TOA-D) associated with the transmission and reception of such signal(s), and to exchange the recorded transmission strobe time(s) and receive strobe time(s) associated with the exchanged wireless signals from which one or more of a signal propagation time, timing offset and frequency offset are computed (Col. 6, line 59 – col.

7, line 22).

Regarding claim 19, Cedervall inherently teaches a precision timing engine in 203 (fig. 1), responsive to a control element, to generate and issue multiple (N) messages via the wireless transceiver, to record the transmission and reception strobe time(s) associated with the exchange of such messages, and to compute one or more of the signal propagation time and the timing offset from which the proximal distance is determined (col. 7, line 15-22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 10-11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (IEEE, Vol. 2, September 18, 2000) in view of Adams et al. (IEEE, vol. 2, March 20, 2001).

Regarding claim 1, Li teaches a method comprising: exchanging two or more signals with one or more target device(s), see page 1451, 2nd column, 2nd paragraph, each device recording a transmission strobe time t_0 and a receive strobe time t_1 associated with the transmission and reception of such signal(s); and exchanging the recorded transmission strobe time(s) and receive strobe time(s) associated with the exchanged signals from which one or more of a signal propagation time, timing offset and frequency offset are computed (see TOA, page 1451, 2nd column, 2nd paragraph) . Li fails to teach the signals used for computing the propagation time between the devices are ultrawideband (UWB) signal. In the same field of Li, Adams teaches that UWB signals can be used to compute the range or distance between the devices (page 2-786, 3rd section). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the ultrawideband of Adams to the system of Li in order to resist to jamming and multipath interference when measuring.

Regarding claim 2, Li also teaches comprising: computing as the signal propagation time and the timing offset the time delay TOA between the transmission strobe time t_0 of

an issuing device, and the receive strobe time t_{00} at the target device (page 1451, 2nd column, 2nd paragraph).

Regarding claim 3, Li further teaches that the signal propagation time is computed after the exchange of at least two messages, M and M', in accordance with the following equation: $t_p = (T_{A'} - T_A) - (T_{B'} - T_B) / 2 = \text{distance} / \text{signal_velocity}$ where: T.sub.A is the recorded time of transmit of message M at a first device (A); T.sub.B is the recorded time of reception of message M at a second device (B); T'.sub.B is the recorded time of transmit of message M' at a second device (B); and T'.sub.A is the recorded time of reception of message M' at the first device (A) (see equation 2 on page 1452 of Li).

Regarding claim 4, Li also teaches that the time of reception (T.sub.B, or T'.sub.A) represents the time of transmission, signal propagation delay, and a timing offset between the device(s) (t.sub.o), (see page 1451, 2nd column, 2nd paragraph).

Regarding claim 10, the apparatus claim is interpreted and rejected for the same reason as set forth in the method claim 1.

Regarding claim 11, the combination of Li and Adams inherently teaches a precision timing engine, responsive to a control element, to generate and issue multiple (N) messages via the UWB transceiver, to record the transmission and reception strobe

time(s) associated with the exchange of such messages, and to compute one or more of the signal propagation time and the timing offset from which the proximal distance is determined (see TOA and delay on page 1451, 2nd col, 2nd para of Li).

Regarding claim 17, the combination of Li and Adams inherently teaches control logic, coupled with a memory element comprising executable content, to execute at least a subset of the content to implement the ranging agent (see figure 1).

Allowable Subject Matter

Claims 5-9, 12-16, 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, the prior art of record fails to teach computing the frequency offset as claimed.

Regarding claim 9, the prior of record fails to teach detecting a transmission strobe time, or a reception strobe time by receiving an analog representation of the message for transmission or upon reception, respectively, and denoting a time when the analog representation of the message exceeds a threshold level.

Regarding claim 12, the prior art of record fails to teach that the precision timing engine comprising: a filter, to receive an analog representation of a message and generate a strobe signal once the analog representation of the message reaches a threshold; and a latch element, coupled with the filter, to transfer an output of a counter to the control element to record the counter output as a strobe time associated with the transmission or reception of the message.

Regarding claim 13, the prior art of record fails to teach that the ranging agent comprising: a frequency offset compensation element, responsive to a control element, to receive transmission and reception strobe times associated with the exchange of a number (N) of messages, and to determine a frequency offset as a ratio of a ratio of the clock frequency of the first device with respect to the second device.


Regarding claim 20, the prior art of record fails to teach that the ranging agent comprising: a frequency offset compensation element, responsive to a control element, to receive transmission and reception strobe times associated with the exchange of a number (N) of messages, and to determine a frequency offset as a ratio of a ratio of the clock frequency of the first device with respect to the second device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone number is 571-272-7854. The examiner can normally be reached on FIRST FRIDAY OFF.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDERSON D. MATTHEW can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


LEE NGUYEN
PRIMARY EXAMINER